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| 09/964,601 | 09/28/2001 | Hans Braendle | 622/43770CO | 2035 |

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EXAMINER

BLACKWELL RUDASIL, GWENDOLYN A

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1775

DATE MAILED: 06/05/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/964,601

Applicant(s)

BRAENDLE ET AL.

Examiner

Gwendolyn A. Blackwell-Rudasill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

The following articles were not present with the Information Disclosure Statement:

(1) "Titanium Aluminum Nitride Films: A New Alternative to TiN Coatings," Muenz, Journal of Vacuum Science & Technology; (2) "Interrelationship Between Processing, Coating Properties and Functional Properties of Steered ARC Physically Vapour Deposited (Ti, Al)N and (Ti, Nb)N Coatings, Roos et al., Elsevier Sequoia; (3) "The Structure and Composition of Ti-Zr-N, Ti-Al-Zr-N and Ti-Al-V-N Coatings," Knotek et al., Materials Science and Engineering.

It is requested that copies of the missing articles be supplied with applicant's answer to this office action.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "intensity average noise value" in claim 1 is a relative term, which renders the claim indefinite. The term "intensity average noise value" is not defined by the claim nor is the term defined in the specification. Further clarification of the term is necessary.

3. Claims 2-5 and 9-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. The scope of

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protection sought, in claims 2-5 and 9-12, is unclear as to which range is being claimed due to the “preferably” language within the claims. The examiner suggests incorporating the “preferably” limitations located within the claims into a subsequent dependent claim.

4. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 has an improper Markush group that is not claimed in the alternative. Correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-8 and 10-12 are rejected under 35 U.S.C. 102(b) as being anticipated by European Patent Application number 0 701 982, EP ‘982.

EP ‘982 discloses tools with a substrate of high-speed steel or cemented carbide coated with a film of titanium aluminum nitride, where the film is represented by the formula $Ti_xAl_{1-x}N$ with ($x > 0.25$). Yttrium may be added in amounts suitable to improve the properties of the layered film, meeting the limitations of claims 1-(page 5, lines 17-22). The tools made according to the invention can be shaped and machined into cutting tools such as tips and drills, (page 5, lines 48-51). An intermediate layer, having a thickness of 0.05 to 5.0 μm , may be placed between the substrate and the tool body. The intermediate layer can be made of a material

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“selected from a group comprising boride, nitride, carbide, and oxide of IVA, VA, and VIA elements and their solid solutions,” (page, 4, lines 6-14). In addition the

A chemical composition and its properties are inseparable. *MPEP 2112.02*. Because the invention of EP ‘982 can produce the article of applicant’s invention it would inherently have the Q and intensity parameters that applicant’s claim. As such, the addition of the claimed physical property to the claim language fails to provide patentable distinction over the prior art.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-8 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application number 0 701 982, EP ‘982, in view of Japanese Patent Laid-Open Publication number 08-209335, JP ‘335.

EP ‘982 discloses tools with a substrate of high-speed steel or cemented carbide coated with a film of titanium aluminum nitride, where the film is represented by the formula $Ti_xAl_{1-x}N$ with ($x > 0.25$). Yttrium may be added in amounts suitable to improve the properties of the layered film, (page 5, lines 17-22). The tools made according to the invention can be shaped and machined into cutting tools such as tips and drills, (page 5, lines 48-51). An intermediate layer, having a thickness of 0.05 to 5.0 μm , may be placed between the substrate and the tool body. The intermediate layer can be made of a material “selected from a group comprising boride, nitride, carbide, and oxide of IVA, VA, and VIA elements and their solid solutions,” (page, 4, lines 6-14). EP ‘982 does not disclose the ratio of the diffraction intensities $I(200)/I(111)$.

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JP '335 discloses a coated hard member produced by coating the surface of a base material with a carbide, nitride, and carbonitride of a material selected from Ti, Group IVa, Va, VIa metals and Al. JP '335 also discloses that the intensities ratio represented by $I(200)/I(111)$ can be at least 1.5. JP '335 further discloses that when the ratio exceeds 1.5 adhesion is improved, examples of the ratio above 1.5 are represented in Tables 2 and 3.

JP '335 discloses a hard member that can be a tool, coated with a hard film that is similar to the film used in EP '982. Due to the similarities of the films and their subsequent use, it would have been obvious to one skilled in the art at the time of the invention to use the intensity ratio of JP '335 to optimize the adhesion properties of the film in EP '982 to obtain a tool with improved adhesion strength between the substrate and the coating.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over European Patent Application number 0701982, EP '982 et al., as applied to claim 1 above, in view of Japanese Patent Laid-Open Publication number 08-209335, JP '335, and further in view of United States Patent number 4,957,548, Shima et al.

As discussed above, EP '982 in view of JP '335 discloses the limitations of claim 1. EP '982 and JP '335 do not teach the stress within the layer of titanium aluminum nitride. Shima discloses a cermet alloy consisting of a composite carbo-nitride and titanium with one or more elements of Groups 4a, 5a, and 6a and tungsten. Shima further discloses that for these composites the folding endurance ranges from 152-190 kg/mm² (Table 1), with the folding endurance equivalent to the hardness of the layer.

Although EP '982 in view of JP '335 does not specifically disclose the stress within the layer, it is known in the art that the amount of stress within the layer is related to the hardness of the composite layer. The higher the hardness of the layer the better the wear resistance. It would have been obvious to one skilled in the art at the time of invention through routine

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experimentation and optimization to measure the hardness value of Shima's invention to optimize the wear resistance that is taught by EP '982 in view of JP '335, to obtain a tool with increased wear resistance.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn A. Blackwell-Rudasill whose telephone number is (703) 305-9741. The examiner can normally be reached on Monday - Friday; 6:30 am - 3:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Gwendolyn A. Blackwell-Rudasill
Examiner
Art Unit 1775

gbr
May 31, 2002


DEBORAH JONES
SUPERVISORY PATENT EXAMINER